Annual Report on the Louisiana Newborn Screening Program for Genetic and Other Congenital Conditions

State Fiscal Year 2024

Prepared by:

Office of Public Health – Bureau of Family Health

Genetic Diseases Program

Amy Zapata, MPH

Shane Bates, JD MPA

S. Amanda Dumas, MD, MSc

Ayesha Umrigar, PhD

Heiki Griffin, RN BSN

Cheryl Harris, MPH

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LOUISIANA DEPARTMENT OF HEALTH

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Introduction

Approximately 58,000 infants are tested each year for genetic and metabolic conditions as a part of Louisiana's newborn "heel-stick" screening and follow-up system, referred to collectively as the newborn screening program. Of those newborns, approximately 1,500 require further testing and about 170 are ultimately diagnosed with one or more of the disorders on the state newborn screening panel. For newborns with genetic or metabolic conditions that may cause a disability or death without intervention, early testing and diagnosis is key.

All states and territories have a newborn screening program to ensure screening occurs within the first 24-48 hours after birth and that appropriate follow-up education, testing, and care is provided. As medical technologies and treatments advance, it becomes possible to screen for increasingly more conditions. Therefore, the national Advisory Committee on Heritable Disorders in Newborns and Children (ACHDNC) was established[1,2] to provide advice and recommendations to the Secretary of Health and Human Services (HHS Secretary) on what conditions should be included on a Recommended Uniform Screening Panel (RUSP). All states rely on the RUSP to inform their own state panels. Additionally, each state defines their own processes for adding conditions. In Louisiana, the conditions on the state newborn screening panel, and the laboratories authorized to complete the testing, are outlined in the Louisiana Administrative Code (LAC). As of February 2024, Louisiana's standard newborn screening panel approved in the LAC includes 34 of the 37 conditions listed in the RUSP (see Appendix A for conditions on the Louisiana panel). These are the conditions that are required for all Louisiana newborns.[3]

In 2023, the Louisiana legislature modernized the state's authorizing statute for the newborn screening program to help ensure that children born in Louisiana have access to nationally recommended testing as guidelines evolve. The law now outlines a more defined process for adding new conditions to the state newborn screening panel. In addition, the law requires the Louisiana Department of Health (LDH) to publish an annual report to the legislature on any conditions added to the RUSP and the status of implementing those conditions into the state newborn screening program. This inaugural report aims to satisfy that mandate by providing an overview of the newborn screening program, the process for determining conditions to include in the panel, and the status of nationally recommended conditions that have not yet been implemented in the state.

Administration of Louisiana's Newborn Screening Program

The Louisiana Department of Health is responsible for the state's newborn screening program (see Louisiana R.S. 40:1081.2[B]). The Genetic Diseases Program, housed within the Office of Public Health (OPH), Bureau of Family Health (BFH) is the lead section of LDH responsible for Louisiana's newborn heel stick screening and follow-up system, which tests for genetic, metabolic and other heritable conditions.

[1] Public Health Service (PHS) Act, 42 U.S.C. 217a: Advisory councils or committees

[2] Title XI § 1111 (42 U.S.C. § 300b-10)

[3] No test is to be given to a child whose parent or legal guardian objects.

The Genetic Diseases Program has several key functions:

- Overall expertise for LDH in genetic, metabolic and other heritable conditions
- Coordination of the Louisiana Genetic Diseases Program Advisory Committee (GDPAC), which advises LDH on matters related to the state's newborn screening program
- Coordination across LDH sections in processes to assess new conditions and to prepare for implementation, including rulemaking
- Management of the specimen collection cards used by birthing facilities
- Monitoring all results for babies reported from the designated laboratories, year-round
- Ensuring follow up testing and linkage to care for infants with abnormal results, in partnership with contracted specialists, pediatric providers, and families
- Provision of an on-line portal for providers to access results and follow up information
- Performance monitoring of the screening program – from point-of-collection, through laboratory testing and linkage to follow up testing and care

Act 17 of the 2023 Regular Session of the Louisiana Legislature made important changes to how the OPH Genetic Diseases Program will work to assess conditions for inclusion in the state's newborn screening panel.

Highlights of the process established by Act 17 are outlined below:

1. The laboratory established by LDH shall provide testing for each condition listed in the rule promulgated by LDH.
2. LDH is required to issue rules in accordance with the Administrative Procedure Act, outlining the genetic or other congenital conditions for which newborns delivered in the state shall be tested, unless the parent or guardian objects. Conditions currently being tested are listed in the Administrative Code.
3. At least annually, the state health officer will review conditions included in the state newborn screening panel and, in consultation with genetic disease subject matter experts (primarily program staff and the Louisiana GDPAC) will make recommendations to the LDH Secretary for any conditions to be added.
4. After adding a condition to the list by rulemaking, if needed, LDH shall request a legislative appropriation for testing and to provide the services required.
5. Beginning March 1, 2024, LDH will submit an annual report to the legislature of any condition added to the national RUSP, and the status of the department's review and determination on implementing testing for the condition as a part of the state newborn screening panel.

Process for Additions to the Louisiana Newborn Screening Panel

Act 17 of the 2023 Regular Session of the Louisiana Legislature made important changes to the state's newborn screening law in an effort to help ensure that Louisiana stays up-to-date with the RUSP, if those conditions are determined by Louisiana stakeholders to be appropriate for the state's screening panel. Specific conditions identified in law were removed from the statute in favor of utilizing the department's rulemaking authority. This is a more efficient process that still affords the opportunity for public visibility and legislative oversight. Also, the modernized law will make the timing and processes to add new conditions and tests clearer for the public,

healthcare systems, legislators, payers and the sections within the health department responsible for implementing the newborn screening program—from testing implementation through follow up and ongoing care.

In accordance with the new law, the state health officer will review the state newborn screening panel and make recommendations about conditions on the panel at least annually to the LDH Secretary. Throughout the year, the OPH Genetic Diseases Program staff and the Louisiana GDPAC will monitor the RUSP for newly approved conditions. Additionally, Genetic Diseases Program staff and the GDPAC will work to complete all of the necessary research and feasibility assessments to support decision-making related to adoption and implementation of new conditions. The Louisiana GDPAC was established in 1967 and includes representatives from the state's medical schools; the disciplines of genetics, pediatrics, obstetrics, hematology, endocrinology and pulmonology; representation from OPH including nutrition, laboratory, social work, children's special health services, maternal and child health; and two individuals with lived experience. The committee convenes quarterly.

Below is a summary of the steps taken when considering and ultimately incorporating new conditions in the state newborn screening panel for genetic and other congenital conditions (please also see the flowchart later in the report).

1. New Condition Proposal

A new condition is considered for inclusion in Louisiana's newborn screening panel when 1) it is added to the RUSP, or 2) it is requested by an interested stakeholder, such as a legislator or advocate. By the end of State Fiscal Year 2024, the Genetic Diseases Program will create a dedicated online review request process on the department's website.

2. Genetic Diseases Program Advisory Committee Review

The Louisiana GDPAC convenes quarterly to review proposed conditions for the newborn screening panel. For any new condition under consideration, the GDPAC conducts preliminary discussions to determine 1) whether there is a screening method approved by the Food and Drug Administration (FDA) for the condition, and 2) whether the condition has an evidence-based, safe and effective treatment protocol. Assuming those considerations are met, the GDPAC then conducts additional research to evaluate the costs associated with the new condition, including, but not limited to: laboratory instrumentation and technology costs; laboratory personnel needs for piloting and implementation of new tests; and the costs of staff and specialists who may be needed for follow up on abnormal results. The GDPAC, OPH Laboratory and Genetic Diseases Program personnel also assess the time that will be required for piloting new tests and other readiness factors (see Appendix B for the decision assessment and cost analysis templates). Louisiana Medicaid is also consulted to assess the procedural billing codes and costs required for implementing Medicaid reimbursement for screening, as well as the costs for treating conditions detected early through newborn screening. Once these assessments are completed, the GDPAC votes on whether to recommend adding the condition to the state newborn screening panel.

3. LDH Leadership Advancement

The GDPAC recommendation to proceed with adoption of a new condition initiates the processes for department approval through a decision memorandum to the state health officer, OPH, and LDH leadership. Once approved, the OPH Laboratory initiates preparations for testing and validation studies to evaluate the efficacy of the methodology used for testing. Concurrently, the OPH Genetic Diseases Program initiates rulemaking in accordance with the Louisiana Administrative Procedures Act.

4. Timeline Related to Implementation

Overall, the aim is for Louisiana to implement testing for conditions on the RUSP within two years of being recommendation nationally, if such screening is appropriate for Louisiana. This timeline will require changes in both Louisiana GDPAC review and departmental and legislative decision-making. Currently, it can take up to two years or longer before testing can be initiated with the state laboratory from the time the GDPAC recommends that a new condition be added to the state's panel. In SFY 24, the OPH Bureau of Family Health established a new staff role to facilitate timely research and GDPAC deliberations. However, other factors include laboratory readiness and financing. As such, legislators are a key part of the adoption of testing for nationally recommended conditions. Budget required for new conditions is detailed in the Fiscal and Economic Impact Statement that is part of the rulemaking process. In addition, Act 17 of the 2023 Regular Session of the Louisiana Legislature requires the department to request legislative appropriation as needed. Part of the intent of this report is to help the legislature, health systems, and the department anticipate the resources needed to support this critical early detection and intervention system.

Procedure for Adding New Conditions to the State Newborn Screening Panel

Status of Approved RUSP Conditions under Review by LDH

Louisiana has successfully implemented 34 of 37 conditions approved on the national RUSP. Conditions on the RUSP but not yet added to the Louisiana panel include X-Linked Adrenoleukodystropy (X-ALD), Mucopolysaccharidosis II (MPS II), and Guanidinoacetate methyltransferase (GAMT) deficiency. These conditions are currently undergoing Louisiana GDPAC readiness and cost analysis review, as described further below. At the end of January 2024, the national ACHDNC voted to recommend infantile Krabbe disease for inclusion in the RUSP. While not yet approved by the HHS Secretary, this condition likely will come before the Louisiana GDPAC to initiate review in SFY 25.

X Linked Adrenoleukodystrophy (X-ALD)

X-ALD was added to the RUSP in February 2016; and the Louisiana GDPAC recommended it for inclusion in the Louisiana newborn screening panel in 2019. The condition is screened for in 38 states, including Texas, Alabama, and Florida. The OPH Laboratory and the Genetic Diseases Program have conducted a cost analysis and full review.

Implementation of X-ALD screening by the OPH Laboratory requires several technology improvements including changes to existing laboratory software and servers. The laboratory has initiated this work, but it is complex and requires coordination between the Office of Technology Services (OTS), the OPH Laboratory, and two external vendors. Customization and integration of this software are highly dependent on external vendors. A Laboratory Information Systems specialist is needed to complete the expansion of the laboratory information systems, data modernization, and user acceptance testing for quality compliance. Formerly, the OPH Laboratory has been able to implement testing for conditions using current staff. However, in recent years, the RUSP has expanded quickly and the additional LIS specialist will be needed to ensure that the OPH Laboratory can keep pace with this expansion while adhering to compliance regulations.

Concurrent with laboratory readiness activities, the Genetic Diseases Program will work with Medicaid to determine the appropriate coding and rates for X-ALD screening. Additionally, the Louisiana GDPAC has identified the need to develop a treatment plan for the care of X-ALD cases identified through newborn screening. A subcommittee with pediatric specialists is being formed to discuss treatment plan options and a cohesive protocol in Louisiana.

While the OPH laboratory is the principle laboratory that is authorized to process newborn screening tests for the state, several Louisiana birthing facilities have had a long-standing arrangement with a commercial laboratory (Perkin Elmer, now Revvity) to process newborn screening specimens. While most states generally have only one laboratory for the jurisdiction's newborn screening program, this arrangement is currently specifically allowable in rule. At times, the commercial laboratory has been able to offer their facilities the opportunity to test for conditions on the RUSP, but not yet required in rule or implemented in the state laboratory. X-ALD is one such condition. Revvity reports these abnormal results to OPH, along with the results of the tests for conditions officially on the state newborn screening panel. The Genetic Diseases Program is currently conducting follow up and coordination activities to arrange for confirmatory testing and linkage to care for these cases, as is done with abnormal results for

conditions on the official state panel. A challenge to the commercial laboratory implementing tests before formal adoption of the condition on the state panel is that the Louisiana GDPAC and OPH Genetic Diseases Program may not have developed protocols for follow up and may not have the necessary follow-up personnel and specialist consultation contracts in place (see recommendations in the Conclusion and Considerations section).

Overall, X-ALD is expected to be elevated to the state health officer by the GDPAC in SFY 24, along with information about budget and actions needed for implementation.

Mucopolysaccharidosis Type II (MPS II)

MPS II was added to the RUSP in January 2022 and is pending discussion and approval by the GDPAC. Currently, four states (Missouri, Illinois, West Virginia and Pennsylvania) screen for MPS II. The Genetic Diseases Program, in collaboration with the OPH laboratory, has initiated the implementation review and cost analysis with an established date for completion projected for 2024. The review is in the preliminary phase by Genetic Diseases Program and OPH Laboratory staff.

Currently, the Genetic Diseases Program has no knowledge of Revvity conducting testing for this condition. However, the Genetic Diseases Program does have a working relationship with Revvity and would be notified if they began testing for MPS II.

Guanidinoacetate Methyltransferase (GAMT) Deficiency

GAMT was added to the RUSP in August 2022 and is pending discussion and approval by the GDPAC. Currently five states (Utah, Michigan, Pennsylvania, New York and Connecticut) screen for this condition. As with MPS II, review of readiness and cost analysis of this condition has been initiated and is with the Genetic Diseases Program and OPH Laboratory. The established timeline for review completion is 2024.

Currently, the Genetic Diseases Program has no knowledge of Revvity conducting testing for this condition. However, the Genetic Diseases Program does have a working relationship with Revvity and would be notified if they began testing for GAMT.

Conclusion and Considerations

Universal screening of newborns for genetic, metabolic and other heritable conditions is a critical public investment in the health of children in the state. The passage of Act 17 of the 2023 Regular Session of the Louisiana Legislature was an important first step to support timely and efficient decision-making related to this system.

In this inaugural report, the process to review conditions for potential inclusion are discussed, as are the critical points of input and approval. This report also provided a brief summary of the conditions that have been recommended nationally on the RUSP but are not yet incorporated in the standard state panel. The summary of pending conditions was intended to provide legislators and the public with information on the status of deliberations towards and actions needed for final determination and implementation, if approved by state health leaders and the legislative oversight processes.

In addition to decisions about specific conditions, this report elucidates some important process and policy improvements:

- This summary report will be published annually; however, the intent of the Bureau of Family Health leadership is to make process and status of deliberations and implementation readily visible to legislators, policy makers, advocates, and families. To that end, the OPH Bureau of Family Health is developing new pages for the LDH website. This will include an online portal for submitting questions about the newborn screening program and conditions. Information about the Genetics Diseases – Newborn Screening Program can currently be accessed at https://ldh.la.gov/page/newborn-screening
- Within LDH, extensive technical, clinical, financial, and policy expertise and input is needed to assess and bring any condition from deliberation to the point of implementation. Since decisions related to newborn screening cross many different sections within LDH, the OPH Bureau of Family Health is developing a "steering committee" within the department to ensure that considerations and decisions within public health, Medicaid, LDH budget, and policy are made concurrently for all affected sections.
- One significant challenge to timely implementation of screening for new conditions is that the same scientists within the OPH Laboratory who must continuously run the existing screening panel on the majority of babies born in the state are also responsible for the complex tasks required to add new conditions. The OPH Laboratory Newborn Screening section does not have scientists dedicated to performing laboratory verification studies for adding new tests at the rate new disorders are being added to the RUSP. One possible solution is to resource the laboratory with two scientists as a development team to complete verifications studies in established timelines. Funding for these positions has been requested previously through a submission to the OPH Budget Office in SFY 24 and 25 but was not granted. This, and other possible approaches to support concurrent operations such as interim outsourcing of laboratory testing for new conditions, will be brought to the newly-forming LDH Newborn Screening steering committee.
- An unusual characteristic of Louisiana's newborn screening program for genetic, metabolic, and other heritable conditions is that there is more than one laboratory that is processing heel-stick samples for Louisiana birthing facilities. Most states have only the state laboratory processing tests or only a contracted laboratory. One of the complexities this introduces is that the commercial laboratory serving some Louisiana facilities may initiate testing for conditions on the RUSP that have not yet been fully reviewed by the Louisiana GDPAC or have the follow-up systems in place to care for newborns who have a positive screen. One option may be to clarify in rule that OPH would only be responsible for the follow-up and coordination for patients with conditions that are included in the published state newborn screening panel. Patients with conditions screened for and identified that are not included on the state newborn screening panel would then remain the responsibility of the ordering hospitals/providers. This, and other possible approaches that balance timely access to available tests and follow up system readiness will be brought to the newly-forming LDH Newborn Screening steering committee.

In the last quarter of SFY 2024, the OPH Bureau of Family Health will be completing the activities as described in this report. In addition, the Bureau has begun to draft new rules in accordance with the Administrative Procedures Act to align with current law. The next annual summary report will be published in advance of the 2025 Regular Session of the Louisiana Legislature.

Appendix A – List of Conditions

Conditions	Date Added to the RUSP	Date Added to the Louisiana Newborn Screening Panel
Classic Phenylketonuria	Pre-dates RUSP	1964, Act 269
Primary Congenital Hypothyroidism	Pre-dates RUSP	1978
Tyrosinemia, Type I	Pre-dates RUSP	2006
S,S Disease (Sickle Cell Anemia)	Pre-dates RUSP	1972 for Af.Am., 1992 for all
Classic Galactosemia	Pre-dates RUSP	1981
S, βeta-Thalassemia	Pre-dates RUSP	1992
S,C Disease ("mild" form of sickle cell anemia)	Pre-dates RUSP	1992
Biotinidase Deficiency	Pre-dates RUSP	1999, Act 328
Congenital adrenal hyperplasia	Pre-dates RUSP	2006
Cystic Fibrosis	Pre-dates RUSP	2007
Homocystinuria	Pre-dates RUSP	1981, added to the rule in 2006
Maple Syrup Urine Disease	2006	1981, added to Rule in 2006
Propionic Acidemia	2006	2006
Methylmalonic Acidemia (methylmalonyl-CoA mutase)	2006	2006
Methylmalonic Acidemia (Cobalamin disorders)	2006	2006
Isovaleric Acidemia	2006	2006
3-Methylcrotonyl-CoA Carboxylase Deficiency	2006	2006
3-Hydroxy-3-Methyglutaric Aciduria	2006	2006
Holocarboxylase Synthase Deficiency	2006	2006
ß-Ketothiolase Deficiency	2006	2006
Glutaric Acidemia Type I	2006	2006
Carnitine Uptake Defect/Carnitine Transport Defect	2006	2006
Medium-chain Acyl-CoA Dehydrogenase Deficiency	2006	2006
Very Long-chain Acyl-CoA Dehydrogenase Deficiency	2006	2006
Long-chain L-3 Hydroxyacyl-CoA Dehydrogenase Deficiency	2006	2006
Trifunctional Protein Deficiency	2006	2006
Argininosuccinic Aciduria	2006	2006
Citrullinemia, Type I	2006	2006
Severe Combined Immunodeficiency	2009	2018
Pompe Disease	2013	2021 Regular Session, Act 305 (implemented January 1. 2022)
X-Linked Adrenoleukodystrophy *Note: study ordered by SCR 3 of the 2016 Regular Session (not promulgated, not tested for)*	2015	Under GDPAC review
Mucopolysaccharidosis Type I	2015	2021 Regular Session, Act 305 (implemented January 1. 2022)

Spinal Muscular Atrophy	2018	2021 Regular Session, Act305 (implemented January 1. 2022)
Guanidinoacetate Methyltransferase Deficiency	2022	See following section
Mucopolysaccharidosis Type II	2022	Under GDPAC review
Krabbe Disease Note: study ordered by Act 507 of the 2016 Regular Session	Pending approval from HHS Secretary	N/A

Appendix B – Decision Form

RECOMMENDATION STATUS	
Dated added to the Recommended Uniform Screening Panel (RUSP)	
States currently testing	
Screening recommended by	
Louisiana Legislation	
CLINICAL/TESTING CONSIDERATIONS	
Condition Description	
Incidence	
Anticipated prevalence in Louisiana (based on ~63,000 births per year)	
Follow up and Treatment	
FDA Approved Lab Testing Method	
Lab Testing Method	
Testing Analyte/Gene	
False Positive Rate	
FINANCIAL IMPACT	
CPT Code	
Lab cost per test (based on ~50,000 tests per year)	
Lab Annual Cost	
Anticipated Lab Reimbursement	
Additional FTE required	
Additional Equipment required	
Cost of Treatment	
Cost for Follow up	
Medicaid/Private Insurance Coverage for Treatment	
OTHER SPECIAL CONSIDERATIONS	
NeoBase 2 Other Testing Analytes Results	
Late Onset	
Genetic Diseases Program Advisory Committee	

Appendix C – Cost Analysis Form

Louisiana Department of Health
Office of Public Health
Cost Analysis

Estimated number of births Percentage of births insured through Medicaid 65% Percentage of births not insured through Medicaid 35%		
Total		

Testing Cost	**Amount**	***Notes***
Lab costs for estimated number of births	$	*Lab cost per test =*
Administrative cost associated with estimated number of births	$	
Genetics Program staff (X FTE) Requested Annual Salary $X + (Benefits @ 52%)	$	
Contracts (for specialist consultation, etc.)	$	
Total Direct Cost	$	
Cost per test for all births (63,000/year)	$	
Portion of cost covered by Medicaid annually	$	
Portion of cost covered by commercial insurers	$	**Cost per test*
	$	
Total Projected Annual Cost	$	
Projected Cost Per Test	**$**	

Louisiana Department of Health
628 North Fourth Street, Baton Rouge, Louisiana 70802
(225) 342-9500
www.ldh.la.gov

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